

MASTER OF SCIENCE IN SOFTWARE ENGINEERING

COMPLEXITY MEASURE FOR THE PROTOTYPE SYSTEM DESCRIPTION LANGUAGE (PSDL)

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The complexity of software is often misunderstood, ill defined or improperly measured. Software complexity is represented by the degree of complication of a system determined by such factors as control flow, information flow, the degree of nesting, the types of data structures, and other system characteristics, such as unconventional architectures. However, a common notion of software complexity fulfills a non-functional requirement, that of understandability. How well do we understand the control flow, the data structure, etc?

Rapid prototyping is an excellent tool to define system requirements and decrease developmental risk. Software complexity measured early (i.e., during prototyping), helps to minimize the complexity, which in turn helps to decrease the developmental risk also. The Prototype System Description Language (PSDL) provides the necessary code to achieve rapid prototyping. As a result, we have a need to accurately measure the complexity of PSDL.

KEYWORDS: Complexity, Software Complexity, Software Complexity Measures, Measurement Theory, Scale, Scale Type, PSDL, CAPS, PSDL Complexity

XML AS A DATA EXCHANGE MEDIUM FOR DoD LEGACY DATABASES

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This thesis addresses the issue of interoperability in DoD legacy system databases and evaluates XML as a tool for transferring message data between varied systems. With the demands for increased communication, the dire requirement for a common mode of information transfer is greatly realized. Many legacy systems have developed their own unique interfaces. XML is one solution which can help ease the transition to a common interface. This thesis is a part of a larger team effort. In contributing to this larger effort, a software program was developed to generate select messages in their native and XML formats.

KEYWORDS: Interoperability, Interconnectivity, Legacy Database Systems, XML

